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AFWL STANDARDS FOR SCIENTIFIC AND TECHNICAL REPORTS.(U)
APR 80 A R GUIST, D C DEVLIN
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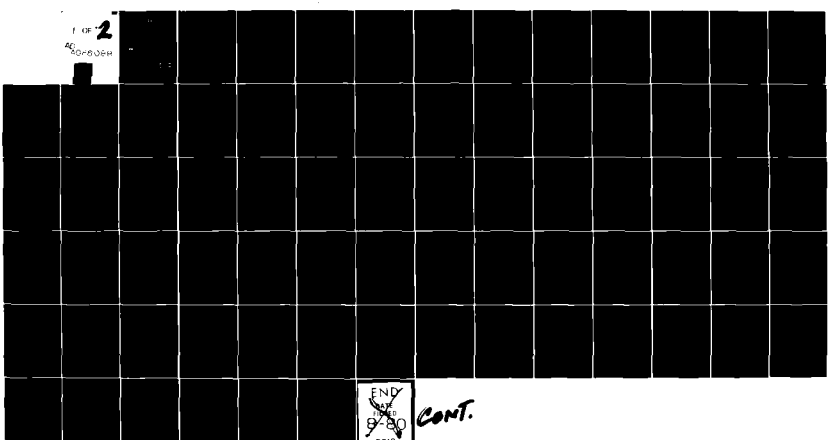
1 OF 2
AD-A086 088



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AFWL STANDARDS FOR SCIENTIFIC AND TECHNICAL REPORTS

(This report supersedes AFWL-TR-79-999)

Althea R. Guist
Dolores C. Devlin

April 1980

Approved for public release; distribution unlimited.

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AIR FORCE WEAPONS LABORATORY
Air Force Systems Command
Kirtland Air Force Base, NM 87117

80 6 2 054

AFWL-TR-80-299

This final report was prepared by the Air Force Weapons Laboratory, Kirtland Air Force Base, New Mexico, under Job Order 99930000. Ms. Althea R. Guist (SUR) was the Laboratory Project Officer-in-Charge.

When US Government drawings, specifications, or other data are used for any purpose other than a definitely related Government procurement operation, the Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise, as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

This report has been reviewed by the Public Affairs Office and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

Althea R. Guist
ALTHEA R. GUIST
Project Officer

FOR THE DIRECTOR

J. D. GERRARD-GOUGH
Chief, Technical Reports Branch

WILLIAM J. MOULDS
Chief, Technical Services Division

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REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
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TR	Metric System	TR Numbering Systems
MIL-STD-847A	SI Units	Classification Markings
Format	Math Signs and Symbols	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report implements MIL-STD-847A and presents the standards for preparing, editing, reproducing, and distributing Technical Reports for the Air Force Weapons Laboratory. Its purpose is to standardize details for clarity, uniformity, and consistency and thus reduce the costs of publication. Format samples follow immediately after instructions. These standards are intended to be used for reference in specific areas and need not be read from cover to cover. An index is included to aid the reader in finding the specific areas of interest.

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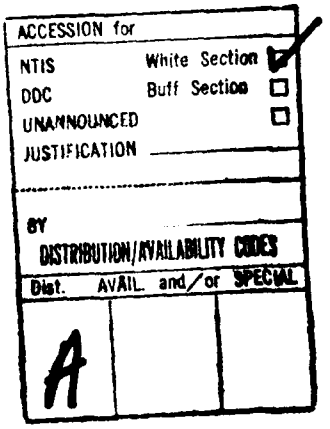
PREFACE

The material for these standards has been gathered from several sources. The intent of the authors is to achieve the greatest simplicity of format for Air Force Weapons Laboratory (AFWL) technical reports in conformance with MIL-STD-847A requirements. While these standards are addressed to AFWL and its contractors, they may be of value to other organizations producing scientific and engineering reports.

The authors wish to thank Ms. Ethel Olson, whose background experience contributed immensely to the fine detail; Ms. Gloria Delgado for composition; Mr. V. Coy Jones, Mr. Arthur B. Davis, and Ms. Patricia J. Phelps, all of SUR. The authors wish to acknowledge the wholehearted encouragement of Mr. William J. Moulds, Chief of the AFWL Technical Services Division (SU), and the close supervision and support of Mr. John D. Gerrard-Gough, Chief of the Technical Reports Branch (SUR).



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INTRODUCTION

TECHNICAL REPORTS

This publication provides Project Officers, technical writers and typists, and others with guidance in preparing professional technical reports for the Air Force Weapons Laboratory (AFWL). Its purpose is to standardize details for clarity, uniformity, and consistency to reduce the costs of preparing, editing, reproducing, and distributing such reports. It implements Military Standard 847A (Ref. 1) for the AFWL and is to be used for the preparation of in-house, contractor, and grantee technical reports. Special instructions pertain to DNA-funded reports.

A technical report (TR) is defined in Reference 1 as any preliminary or final technical document written for the permanent record to document significant scientific results obtained from, or recommendations made on, Department of Defense sponsored or cosponsored scientific and technical activities. AFWL/SUR processes all AFWL TRs for submission to the Defense Technical Information Center.

Preparation Instructions are covered first; succeeding sections include a breakdown of the elements of a technical report into Front Matter, Body of Report, and Reference Material. Instructions on DNA-Funded Reports provide the additional information needed to process this type of TR. The section on Measurement Units references the Metric Guide approved for Government use; it also includes a list of standard abbreviations for ready reference. The Security Classification Requirements section delineates the additional information needed to process classified reports, and it references pertinent security regulations.

Format samples follow immediately after instructions. This document, therefore, can be used for reference in specific areas and does not need to be read from cover to cover. An index is included to aid the reader in finding the specific areas of interest.

---

1. Military Standard, Format Requirements for Scientific and Technical Reports Prepared by or for the Department of Defense (MIL-STD-847A), 31 Jan 73, (Notice 2, 1 July 1978).

OTHER TECHNICAL PUBLICATIONS

Series XX-500 TRs--Reprints of theses, dissertations, and journal articles may be published "as is" with an AFWL-TR-XX-500 number obtainable from SUR. SUR will provide editing and typing support.

SUR will assign the XX-500 number and process the DD Form 1473, the cover, and the Distribution List for submission of the reprint through AFWL/DAR to the 1606 ABW/DAR for publication of the required number of copies.

Approved, but unpublished, theses and dissertations may be published with a regular TR number and processed by SUR.

NOTE TO PROJECT OFFICERS: When your thesis or dissertation is printed and published as an Air Force Institute of Technology (AFIT) TR with an AFIT TR number, be sure to include your organization and address on the Distribution List for the number of copies needed.

Technical Notes--A Technical Note (TN) contains information for use primarily within the originating activity; it is not of widespread scientific significance.

Because the range of interest in a TN is limited, distribution of a TN is restricted to AFWL organizations, but may be made known to specific investigators outside AFWL. Include the AFWL Technical Library (AFWL/SUL) and Historian (AFWL/HO) on the Distribution List.

Use the same format as a TR; however, variations are acceptable. SUR editing assistance is available; however, the Project Officer's organization assigns the TN number, processes the TN, and sends it to the 1606 ABW/DAR.

Although a TN is not entered into the Scientific and Technical Information (STINFO) program, the quality of all TNs must be approved by the AFWL STINFO Officer, the Chief of SUR.

NOTE: If the contents are of interest to the scientific community in general, the document should be changed to a TR and processed as a TR.

PREPARATION INSTRUCTIONS

DRAFTS

Contractors and laboratory personnel will submit clean, typed, 1½- or double-spaced drafts to AFWL/SUR for assignment of a TR number and editing. The editor will look for the following:

- Complete and acceptable technical presentation
- Clear, informative writing
- Clear, uncluttered professional illustrations
- Proper format

All edited drafts are sent to the Project Officer for review and agreement.

The Project Officer will return in-house drafts to AFWL/SUR for processing.

The Project Officer will review contractor prepared reports for complete and accurate technical content and compliance with contract specifications. He will then return an annotated edited/reviewed copy of the draft to the contractor for correction and preparation of the final, reproducible, camera ready copy (CRC). The contractor must return this draft with the CRC.

CAMERA READY COPY

The contractor will prepare the CRC on white, heavyweight, opaque bond paper or reproducible masters (8½ by 11 inches) suitable for camera and microfiche reproduction. *Submit originals, printed on one side only, with no binder holes.*

Print must be clear, legible, and in particular reproducible.

Handwritten calculations and equations are not acceptable for AFWL TRs.

Figures, tables, or inset material must be taped or pasted down all around the sides. Use transparent tape. Keep paste within the margin of the inset; overlap around the edges causes smudging and is not acceptable. This is a requirement of 1606 ABW/DAR, because of reproduction equipment limitations.

Delete all extraneous markings such as contractor TR numbers, drawing numbers, and similar contractor identification. The contractor's TR number may be included on the DD Form 1473.

AFWL/SUR will inspect all incoming CRC for compliance with these standards. Unsatisfactory CRCs will be returned to the contractor through the Project Officer. If necessary, SUR will meet with contractors to resolve problems and

provide guidance. Upon completion of publication, all CRCs are returned to the Project Officer for disposition.

The Defense Technical Information Center (DTIC) reduces each report to microfiche and then uses the microfiche to print hard copy in response to requests. A report that is merely legible will make a poor quality microfiche, resulting in an unreadable hard copy. Therefore, AFWL requires that CRC submitted for AFWL technical reports must be original print. This includes not only the text, but forms, drawings, schematics, tables, listings, and computer printouts. Photographs must be black and white glossy prints. Color requires special authorization. In cases where reproduction with electrostatic copiers is unavoidable, care must be taken to insure that only a good quality product is submitted.

DISTRIBUTION

Distribution list--The Project Officer provides SUR with a listing of the required distribution. Distribution lists should be kept to a realistic minimum. DTIC provides secondary distribution to government agencies and bona fide contractors. In addition, the Project Officer is responsible for obtaining prior approval of distribution from Headquarters, Defense Nuclear Agency (DNA), ATTN: STTI, for all DNA-funded technical reports.

Distribution lists for classified reports will include a statement signed by the Division Chief that all addresses have the appropriate facility clearance and storage capabilities. SUR has a form letter for this requirement. NOTE: Some contractors are cleared to work on classified projects and in classified areas but do not have the facilities for storage of classified material.

Figure 1 is how a sample distribution list will appear in the report. To avoid lengthy lists comprising many pages of print, only the organization and, where necessary, the city are shown. A copy of the Project Officer's listing containing complete addresses is forwarded to SUR with the letter of transmittal.

Handling--Initial distribution is handled by the AFWL Project Officer. Subsequent TR requests are sent to the Defense Technical Information Center, Cameron Station, Alexandria VA 22314, and may require the originator's approval to release classified and limited distribution reports.

Distribution release statements--AFWL TRs must display one of the following distribution release statements.

DISTRIBUTION

DTIC (DDA)
AUL (LDE)
AFSC (DLWM)
AFELM, Rand Corp, Santa Monica
AFWL (SUL)
(HO)
USAFA (FJSRL)
AFAL (TEO)
SAMSO (DYD)
NWC (Code 343)
AFATL (DL)
AFAPL (RJL)
McDonnell-Douglas, St Louis
Boeing, Seattle
Hughes, Culver City
Hughes, Malibu
Westinghouse Rsch Lab, Pittsburgh
Official Record Copy (AFWL/NTMS/Mr Jones)

Figure 1. Sample distribution list in report.

Statement A

Approved for public release; distribution unlimited.

Statement B

Distribution limited to US Government agencies only; test and evaluation of military systems/equipment are discussed in the report; mo. yr. Other requests for this document must be referred to AFWL (---), Kirtland AFB, NM 87117.

Distribution limited to US Government agencies only; operational testing of equipment/systems is discussed in the report; mo. yr. Other requests for this document must be referred to AFWL (---), Kirtland AFB, NM 87117.

The Project Officer determines which statement applies.

Approval for public release--All Statement A reports must be cleared by the AFWL Scientific and Technical Information Officer (STINFO) and approved for public release by the Air Force Contract Management Division's Public Affairs Office (AFCMD/PA). See sample form letter (Fig. 2) available from SUR. PA requires eight copies of the report.

PREPARATION

Spacing--Use 1½ or double line spacing for the text of drafts and CRC. An extra half to one space between paragraphs is desirable for easier reading and

DEPARTMENT OF THE AIR FORCE

Request Approval for Public Release

AFWL/SUR (STINFO)
AFCMD/PA (Public Affairs)
IN TURN

1. The attached document is recommended for release to the general public. Pertinent information has been included on the reverse side of this letter. Any questions concerning this submission should be referred to the requestor in the routing block.

2. The document has been reviewed by competent authority. Copyright of the technology discussed, if any, is determined to be adequately identified and clear of proprietary rights. It is also considered that the content of the document is timely and that public release is in the national interest.*

3. Public release approval of this item is recommended at the lowest level delegated by the Secretary of Defense for Public Affairs.

(Signature) _____

Type Name _____

Tele Number _____

*If the attached concerns high energy laser technology, the requestor should initial below that it has been reviewed in accordance with DOD Directives 5230.61 with respect to security and 5400.8 in regards to policy.

_____
(initial)

(a) Front.

Figure 2. Form letter requesting approval for public release.

CHECK LIST FOR PUBLIC RELEASE OF TECHNICAL INFORMATION
(AFRs 80-45 and 190-17)

Title of document: _____

The document was prepared under:

a. Job Order Number (JON) _____

b. Contract Number: _____ ( ) Class. ( ) Unclass. ( )

Does contract have a DD Form 254 attached? ( ) Yes ( ) No

Request for release was generated internally _____ outside _____

by _____
(Name, Organization, Phone)

If approved for public release, the document will be released to

_____
(Event or Media, Location and Date)

Approval is requested by: _____

INSTRUCTIONS

1. Office symbol and project officer/author and phone number must be listed in "Reply to Attn of" space of the letter on reverse. The letter must be signed by the responsible branch or division chief--above the originator, as a minimum.

2. Public release approval means unlimited distribution, and world-wide release in the case of documents being released to the clearing house. Cleared documents sent to the Defense Technical Information Center (DTIC) are forwarded to the Department of Commerce's National Technical Information Service (NTIS). NTIS sells without restriction to any customer.

CAUTION: Distribution Limitation Statements (Ref. AFR 80-45) on unclassified papers apply when the government does not have the right to disseminate information that is proprietary either to the contractor or to another government. It also applies when release of another's information would be unfairly prejudicial. Generally, only unclassified "working papers" are limited to DTIC. (Ref. DOD Directive 5200.20 and AFR 12-30).

(b) Back.

Figure 2. Concluded.

editing. Single-spaced CRC is acceptable for reports with no equations. Single-spaced drafts are not acceptable.

Single space footnotes to text and tables, using 1½ or double spacing between footnotes.

Single space references and bibliographic entries, using 1½ or double spacing between entries.

Page size and margins--Published reports are 8½ by 11 inches. Allow a 1-inch margin on all sides of the page to provide a printing image of 6½ by 9 inches.

Word and paragraph division

Word division

- Never carry a divided word over to another page.
- Never divide a word of one syllable (Example: search).
- Never separate a single letter or the first two letters from the rest of the word (Examples: a-round, se-lect).
- Never carry a two-letter syllable over to the following line (Example: like-ly).

Paragraph division

- Never divide a paragraph of less than four lines. Type the whole paragraph on one page or the other.
- Avoid "widow" lines--one liners that start a paragraph at the bottom of a page or end a paragraph at the top of a page.

Correcting typing errors--Use liquid white-out or adhesive correction tape to correct typing errors on CRC. Correctible typewriter ribbon (lift-off tape) is acceptable for minor corrections. Do not erase or use chalked paper. Strip in paragraph-size changes or corrections.

NUMBERING SYSTEMS

Basic rules--Use Arabic numerals for all numbering systems.

Exceptions: Section numbers and volumes, if applicable, will be in Roman numerals; i.e., Section IV, Volume III. Appendixes are identified by letter designation; i.e., Appendix A, etc.

Number figures, tables, equations, and references consecutively throughout the main body of the report (e.g., Table 5, Figure 2). Include the letter

designation with the numbers for material in appendixes (e.g., Figure A2). See appropriate paragraph or section for details.

Numbers at the beginning of a sentence are spelled out.

In text, spell out numbers one through nine; use numerals for 10 and over. Use numerals involving a group of 2 or more numbers in which any 1 is 10 or more:

- The capacitor has 3 leads, 2 pairs of controls, and 12 settings.
- There were eight pressure transducers (five Kulite and three bar gages).
- There were 25 pressure transducers (15 from Test A and 10 from Test B).
- the fourth anchor bolt the 10th anchor bolt

Numbers under 100 preceding a unit modifier containing a number are spelled out:

- three four-pole switches
- one 10-channel magnetic spectrometer
- 120 10-acre hypothetical sites
- 120 three-way experimental switches

Units of measurement and time are expressed in numerals. NOTE: Use the abbreviation for units involving exact measurements.

- 1 in
- 2 ms
- 1 mm

Decimal points should be preceded by a zero.

- 0.25 km

For an inclusive range of numbers, use the following patterns:

- Figures 1-10
- pages 352-357
- 1906-38

Other examples:

three-fourths of an inch	10 x 10 mm
three capacitors	1/2-in-diameter pipe
four strain tests	$3\frac{1}{2}$ orbits
2 to 1	6 hours 4 minutes 20 seconds (6 h 4 min 20 s)
tests 5 and 6	2:1
the seventies	2% to 4% increase
0.5 m	$2 to $3 million
32°-36°F	1980's mid-1980

Page numbering--Number all pages consecutively in Arabic numerals. Center page numbers one-half inch above the bottom of the page. Begin numbering with the first right-hand page immediately following the Report Documentation Page (DD Form 1473). Simply start with page 1, and continue with 2, 3, 4, etc., throughout the report. Do not combine the page numbers with the section numbers, appendix letter, or similar system.

Do not number the Abstract page nor account for the DD Form 1473 in page numbering. The Abstract will be put on the DD Form 1473 by AFWL/SUR.

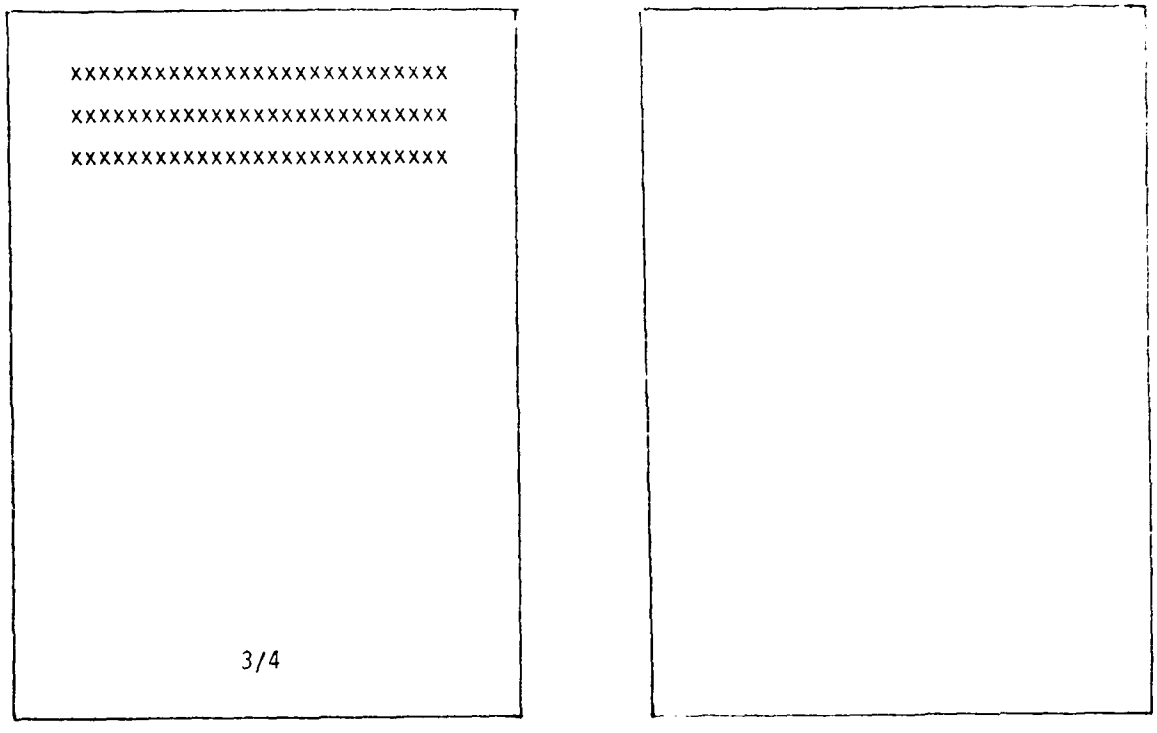
Odd-numbered pages are right-hand pages, and even-numbered pages are left-hand pages. The contents page, the first section, and the first appendix all start on a right-hand page.

Blank pages--Only left-hand (even-numbered) pages may be blank pages.

For unclassified reports only, double-number the page preceding a blank page (e.g., 3/4). This procedure eliminates the need for a separate master sheet with just a page number on it. Samples are shown in Figure 3.

Section and paragraph numbering--Number headings and paragraphs only when needed for clarity. Do not use a decimal numbering system. If needed, number section headings in uppercase Roman numerals, and center the section heading on the first line of type on the page.

Start each section on a new page.



(a) Front. (b) Back.

Figure 3. Sample of double-numbered page for unclassified report.

HEADINGS

Use the following format for section and paragraph identification.

I. FIRST-ORDER HEAD

1. SECOND-ORDER HEAD

a. Third order head--Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

(1) Fourth order head--Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

(a) Fifth order head--Xxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Use the same format without the letters and numbers if section and paragraph identification is not required.

FIRST-ORDER HEAD

SECOND-ORDER HEAD

Third order head--Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Fourth order head--Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Fifth order head--Xxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Bring subsequent lines of each paragraph and subparagraph back to the margin, except for word listings or short statements.

In reports where paragraph identification is not used but identification of a subparagraph listing is needed, use the number or letter designation that would normally fall at the particular indent, e.g.,

The components used in the system were as follows:

a. Vacuum system
b. Pressure measuring system
c. Cathode, grid, and collector
d. Waveguide assembly

The components used in the system were as follows:

(1) Vacuum system
(2) Pressure measuring system
(3) Cathode, grid, and collector
(4) Waveguide assembly

MATHEMATICAL MATTER

The following practices will standardize the presentation of mathematical expressions in AFWL technical reports.

Use typewriter composition for all mathematical expressions; use transfer sheets for mathematical symbols and oversize print not available on the typewriter.

Display (set off from text) all numbered equations and those unnumbered equations that should stand out.

Indent displayed equations at the double paragraph indention. Use triple paragraph indentions for continuations. Make whatever indention adjustments are necessary to accommodate lengthy equations. This method is considerably less time-consuming than centering.

Number all displayed equations consecutively, beginning with 1, and enclose numbers in parentheses at the right-hand margin. Place the number on the same line of a single-line equation and on the last line of a multiple-line equation. For appendix equations, include corresponding letter designations with the number.

Do not punctuate displayed equations.

Parentheses, brackets, braces, and integral and summation signs must be as high as the mathematical expressions they enclose.

Spacing--Put a space before and after mathematical signs (=, +, -, x, >, $\pm$, $\sim$, etc.).

$$t_s = t - r/c$$

Exceptions to the rule follow.

Do not space around a mathematical sign in a superscript or subscript, or in the limits of the summation sign or integral sign.

$$e^{S_n(t-t')} \qquad \sum_{n=1}^{\infty} \qquad \int_{-\infty}^{\infty}$$

The minus sign in a negative quantity is set tight, except before a built-up fraction where the space is needed to separate the sign from the fraction dividing line.

$$G = -\delta \qquad I = -\frac{4\pi}{\Omega}$$

The plus-or-minus symbol is set tight when it qualifies a number and is spaced when it operates a number.

an accuracy of ±5 seconds 10% N ± 2%

Treat simple mathematical expressions in a sentence as part of the running text. Do not break up a simple equation such as $t > 0$ or an expression such as sinh x at the end of a line. A sample of spacing of mathematical text follows.

> Figure 2 shows a particle with charge q located outside a perfectly conducting cylinder tube with length ℓ and radius a. Let $\sigma(z,\phi)$ be the induced charge density on the tube.
>
> For $t > 0$ one deforms C into C_1 and C_∞.

Simplify text equations; i.e., use an oblique line rather than a horizontal bar:

A/BC rather than $\frac{A}{BC}$

$(A/2)\cos x$ rather than $\frac{A}{2}\cos x$

$V_T/2$ rather than $\frac{1}{2}V_T$

Arrangement--Arrange parentheses, brackets, and braces in an expanding order:

$$\left\{\left[\left(\left\{\left[(\ )\right]\right\}\right)\right]\right\}$$

Place transitional words on a separate line at the left margin between equations.

Since

$$\sigma_y = (1/2)_\rho V_i^2$$

and

$$V_i = 2V_\rho$$

therefore

$$\sigma_y = 2_\rho V_\rho^2$$

Define all symbols used in equations; list definitions if numerous, e.g., where

$\bar{v}$ = average velocity

$\bar{E}$ = amplitude of the EMP

T_e = electron energy (eV)

$\bar{B}$ = magnetic field

If a report contains numerous symbols, repeat them in a list of symbols. See subsection Abbreviations, Acronyms, and Symbols in the section on Reference Material.

When necessary, divide long equations before a mathematical sign (=, +, -, etc.). Several example equations follow:

Sample equations

$$\nabla x \left(\frac{1}{\mu}\bar{B}\right) = \bar{J} = \sigma\bar{E} + \frac{\partial(\varepsilon\bar{E})}{\partial t} \tag{1}$$

$$Q = A_2 \rho^1 \left(\frac{p_2}{p_1}\right)^{1-\gamma} \left\{ 2gp_1v_1 \left(\frac{\gamma}{\gamma - 1}\right)\left[1 - \left(\frac{p_2}{p_1}\right)^{\gamma-1/\gamma}\right]\right\}^{1/2}$$

$$= A_2 \left\{ 2g \frac{p_1}{v_1} \left(\frac{\gamma}{\gamma - 1}\right)\left[\left(\frac{p_2}{p_1}\right)^{2/\gamma} - \left(\frac{p_2}{p_1}\right)^{\gamma-1/\gamma}\right]\right\}^{1/2} \tag{2}$$

EDITORIAL AIDS

The frequently used standard mathematical signs and symbols (Table 1) and the Greek alphabet (Table 2) are presented here for quick reference. Table 3 identifies customarily used editorial and proofreading markings.

TABLE 1. MATHEMATICAL SIGNS AND SYMBOLS

$=$	equal to	$\propto$	varies directly; is proportional to
$\neq$	not equal to	∇	DEL--gradient
$\approx$	approximately equal to	$\nabla\cdot$	DEL DOT--divergence
$\sim$	equivalent; similar	$\nabla\times$	DEL CROSS--curl
$\equiv$	identical with	$\therefore$	therefore
$\not\equiv$	not identically equal	$\because$	since, because
∞	infinity	$\cdots$	and so forth (in relation to sequence)
::	equal to, in proportion	$' \; '' \; '''$	prime, double prime, triple prime
$<$	less than	!	factorial
$>$	greater than	$\lvert\ \rvert$	absolute value of quantity within the bars
$\leqq$	less than or equal to	$\rightarrow$	approaches the limit
$\geqq$	greater than or equal to	$\int$	integral
$\angle$	angle	$\sum$	summation
$\perp$	perpendicular to	∂	partial differential
$\parallel$	parallel to	lim	limits of
$\sqrt{\ }$	radical, root		
X or •	multiplied by		
: or /	ratio of, proportion		
$\pm$	plus or minus		

TABLE 2. GREEK ALPHABET

A	α	ALPHA	N	ν	NU
B	β	BETA	Ξ	ξ	XI
Γ	γ	GAMMA	O	o	OMICRON
Δ	δ	DELTA	Π	π	PI
E	ε	EPSILON	P	ρ	RHO
Z	ζ	ZETA	Σ	σ	SIGMA
H	η	ETA	T	τ	TAU
Θ	θ	THETA	Υ	υ	UPSILON
I	ι	IOTA	Φ	ϕ	PHI
K	κ	KAPPA	X	χ	CHI
Λ	λ	LAMBDA	Ψ	ψ	PSI
M	μ	MU	Ω	ω	OMEGA

TABLE 3. EDITORIAL AND PROOFREADING MARKINGS

MARK	CORRECTION REQUIRED	EXAMPLE
Λ OR ⊙	Period required	The report was accepted. Copies were made.
Λ OR ⊙	Comma required	It was adjusted, calibrated and sealed.
Λ OR ⊙	Semicolon required	The mechanism stopped; a cam had stuck.
Λ OR ⊙	Colon required	It is indicated by the following:
Λ OR ⊘	Quotation marks required	...the so-called "cascade effect."
Λ OR ⊖	Hyphen required	The high-pressure system...
Λ	Dash indicated	a. Calibration--The oscilloscopes were...
¶	Begin a paragraph	¶ Occasionally a photograph may be used...
no ¶	No paragraph required	no ¶ But the actual data have not indicated...
V;Λ	Make super- or subscript	$A^{\theta}A^{\theta'}$ and $A_{d}A_{\Lambda}$ the
——	Use italics	...an *a priori* indication that...
═══	Underline	The valve must not be opened.
≡≡≡	Use capital letters	The afwl at kafb...
/	Use lower case letter	A large Counter was needed.
≡//////	Initial cap only	A COMPTON electron was measured.
⌒	No space; close up	Close up this sp ace.
# OR \	Leave space	Leave aspace here.
#	Allow spaces in direction indicated	Allow four spaces to next line.
#>	Insert space vertically	# > Item 1 # > Item 2 # > Item 3
‖	Align vertically	Step 1 Step 5 Step 18
⌒	Delete	Develope this paragraph.
STET	Let word(s) remain	Include the following ~~four~~ items. STET
∿	Transpose letter or word	Transpde the data to a tape recorder.
⌋	Move to right	⌋ Move to right.
⌊	Move to left	⌊ Move to left.
⌋⌊	Use block indentation	⌋ Quoted materials, etc. ⌊
⌐⌙	Move up; move down	t/a [0] [-]
SP OR ◯	Correct the spelling	Seperate point...
(SP)	Spell out abbreviation	The (AEC) has... SP

ELEMENTS OF A TECHNICAL REPORT

ORDER

Although technical reports will not contain all the following elements, those used must appear in the following order:

Front matter.
- Front cover
- Report Documentation Page, DD Form 1473 (required)
- Summary
- Preface
- Table of contents
- List of illustrations
- List of tables

Body of report.
- Introduction
- Main text
- Conclusions
- Recommendations

Reference material.
- References
- Bibliography
- Appendixes
- Glossary of terms
- List of abbreviations, acronyms, and symbols
- Index
- Distribution list
- Back cover

VOLUMES

When a report is comprised of several Volumes, use Roman numerals to identify each Volume.

All Volumes of the same TR will carry the identical basic title, and each separate Volume will carry the identifying Volume number and a distinctive subtitle.

Specify the Volume number and the total number of Volumes; i.e., Volume I of III.

The Abstract of a multiple Volume TR may encompass all the Volumes and thus be the same in each volume, or it may be written to cover the material in each volume separately.

Treat each volume as a separate document with separate covers, DD Forms 1473, Tables of Contents, and numbering systems for pages, figures, tables, etc.

See samples in Figures 4 and 6, pages 27 and 34.

PARTS

The 1606 ABW/DAR capabilities necessitate a limit of 300 pages per publication. Therefore, lengthy TRs must be broken down into Parts.

Breakdown--Treat this type of report as one continuous publication with covers separating the Parts at approximately every 300 pages.

Start each Part at a new section or major paragraph heading when possible.

Be sure each Part begins on a new right-hand (odd-numbered) page.

Front cover--Identify each Part in Arabic numerals on the front cover: Part 1 of 2; Part 2 of 2. See sample covers in Figures 4(a)-(d), pages 25-28.

DD Form 1473--Add a statement to Block 18 (Supplemental Notes), to encompass the following type of information:

> This report is divided into two parts. Part 1 consists of the front matter and text pages 1-252. Part 2 consists of text pages 253-490, Appendixes A and B, and the distribution list.

Place a DD Form 1473 at the beginning of each Part.

Block 1 will reflect the TR number and the particular Part number; i.e., AFWL-TR-78-00, Part 1 (or Part 2 or Part 3 as appropriate).

Block 4 will show the title of the TR and the Part number as follows: TITLE, Part 1 of 3 (or Part 2 of 3, etc., as appropriate).

Block 13 will reflect the number of pages within the covers of the specific Part.

All other information on the DD Form 1473 will be the same for all Parts.

See sample DD Forms 1473 in Figures 6(a)-(b), pages 33-34.

FRONT MATTER

FRONT COVER

The front cover will be prepared by SUR personnel from information provided by the Project Officer or contractor. Include the following information on the front cover and set up in block form at the margin, alongside of and just to the right of the AFWL logo. See Figure 4.

Report number--Use the alphanumeric designation assigned by SUR, which include the year and the number; for example, AFWL-TR-78-123.

Title--Display the title prominently and make it brief and descriptive. Set subtitle (if used) in smaller type than the main title.

Author(s)--Include names in conventional order; for example, John J. Jones.

Performing organization--Enter name, city, state, and ZIP Code, and the appropriate corporate division, university, or laboratory for contractor/grantee reports.

Date--Date shown on the cover is the date of publication and not the date of release or period covered by the report.

Type of report and period covered--Indicate final report and, if applicable, dates covered.

Distribution release statement--Display the designated Statement A or selected Statement B from page 9 and include the same statement in Block 16 of the DD Form 1473.

Controlling office--Enter "Prepared for" followed on the next line by the full, official name and address, including office symbol of the controlling office; i.e., the funding/sponsoring agency.

Monitoring agency--Enter the full, official name and address if different from the controlling office. The monitoring agency has the responsibility for the project, contract, or grant.

INSIDE FRONT COVER

Authors will submit the information required. This page contains the review and approval statement, signatures, and special notices such as sponsor disclaimers, compliance with special regulations, reproduction limitations, legal and supersedure information, and espionage information. See Figure 5, page 29.

AFWL-TR-80-999, Pt. 1

AFWL-TR-
80-999
Pt. 1

STANDARDS FOR PREPARATION OF TECHNICAL REPORTS FOR THE AIR FORCE WEAPONS LABORATORY

Part 1 of 3

Author

March 1980

Final Report

Approved for public release; distribution unlimited.

AIR FORCE WEAPONS LABORATORY
Air Force Systems Command
Kirtland Air Force Base, NM 87117

(a) Unclassified in-house report cover using Statement A.

Figure 4. Sample front covers.

AFWL-TR-80-999

CONFIDENTIAL

AFWL-TR-80-999

STANDARDS FOR PREPARATION OF TECHNICAL REPORTS FOR THE AIR FORCE WEAPONS LABORATORY (U)

Author

XYZ Corporation
123 Blank Street
Los Angeles, CA 90009

March 1980

Final Report

Distribution limited to US Government agencies only; test and evaluation of military systems/equipment are discussed in the report; Mar 80. Other requests for this document must be referred to AFWL (---), Kirtland AFB, NM 87117.

CLASSIFIED BY:
REVIEW ON:
REASON:

AIR FORCE WEAPONS LABORATORY
Air Force Systems Command
Kirtland Air Force Base, NM 87117

CONFIDENTIAL

(b) Classified contractor report cover with sample statements.

Figure 4. Continued.

AFWL-TR-80-999, Vol. 1 SECRET AFWL-TR-80-999 Vol. 1

STANDARDS FOR PREPARATION OF TECHNICAL REPORTS FOR THE AIR FORCE WEAPONS LABORATORY (U)

Volume I of IV
Security Classification Requirements (U)

Author

XYZ Corporation
123 Blank Street
Los Angeles, CA 90009

March 1980

Final Report

Distribution limited to US Government agencies only; test and evaluation of military systems/equipment are discussed in the report; Mar 80. Other requests for this document must be referred to AFWL (---), Kirtland AFB, NM 87117.

AIR FORCE WEAPONS LABORATORY
Air Force Systems Command
Kirtland Air Force Base, NM 87117

CLASSIFIED BY:

CRITICAL NUCLEAR WEAPON DESIGN INFORMATION
DOD DIRECTIVE 5210.2 APPLIES

SECRET

RESTRICTED DATA
This material contains Restricted Data as defined in the Atomic Energy Act of 1954. Unauthorized disclosure subject to administrative and criminal sanctions.

(c) Secret-Restricted Data (CNWDI) report cover.

Figure 4. Continued.

AFWL-TR-80-999

AFWL-TR-
80-999

STANDARDS FOR PREPARATION OF TECHNICAL REPORTS FOR THE AIR FORCE WEAPONS LABORATORY

Part 1 of 3

XYZ Corporation
123 Blank Street
Los Angeles, CA 90009

March 1980

Final Report

This research was sponsored by the Defense Nuclear Agency under Subtask XXXXXXXXXX, Work Unit XX, Title.

Prepared for
Director
DEFENSE NUCLEAR AGENCY
Washington, DC 20305

AIR FORCE WEAPONS LABORATORY
Air Force Systems Command
Kirtland Air Force Base, NM 87117

(d) Unclassified report cover prepared for DNA.

Figure 4. Concluded.

AFWL-TR-80-999

This final report was prepared by the Air Force Weapons Laboratory, Kirtland Air Force Base, New Mexico, under Job Order XXXXXXXX. Major John J. Jones (ABC) was the Laboratory Project Officer-in-Charge.

When US Government drawings, specifications, or other data are used for any purpose other than a definitely related Government procurement operation, the Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise, as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

This report has been authored by a contractor/employee of the United States Government. Accordingly, the United States Government retains a nonexclusive, royalty-free license to publish or reproduce the material contained herein, or allow others to do so, for the United States Government purposes.

This report has been reviewed by the Public Affairs Office and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

JOHN J. JONES III
Major, USAF
Project Officer

FOR THE DIRECTOR

JOHN J. JONES, JR.
Lt Colonel, USAF
Chief, Branch

JOHN J. JONES, SR.
Colonel, USAF
Chief, Division

DO NOT RETURN THIS COPY. RETAIN OR DESTROY.

(a) Statement A reports.

Figure 5. Sample inside front covers.

AFWL-TR-80-999

UNCLASSIFIED

This final report was prepared by the XYZ Company, Los Angeles, California, under Contract F29601-76-C-XXXX, Job Order XXXXXXXX with the Air Force Weapons Laboratory, Kirtland Air Force Base, New Mexico. Majors John J. Jones and Robert R. Roberts (ABC) were the Laboratory Project Officers-in-Charge.

When US Government drawings, specifications, or other data are used for any purpose other than a definitely related Government procurement operation, the Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise, as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

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This technical report has been reviewed and is approved for publication.

JOHN J. JONES III
Major, USAF
Project Officer

ROBERT R. ROBERTS
Major, USAF
Project Officer

FOR THE DIRECTOR

JOHN J. JONES, JR.
Lt Colonel, USAF
Chief, Branch

JOHN J. JONES, SR.
Colonel, USAF
Chief, Division

[This sample shows the page marking for the inside front cover of a classified report. Unclassified reports show no markings.]

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UNCLASSIFIED

(b) Statement B reports.

Figure 5. Concluded.

Standard statements--Place the following statements on the inside front cover of all AFWL Technical Reports.

> This final report was prepared by the XYZ Company, Los Angeles, California, under Contract F29601-76-C-XXXX, Job Order XXXXXXXX with the Air Force Weapons Laboratory, Kirtland Air Force Base, New Mexico. Major John J. Jones (ABC) was the Laboratory Project Officer.
>
> When US Government drawings, specifications, or other data are used for any purpose other than a definitely related Government procurement operation, the Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise, as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.
>
> This report has been authored by a contractor/employee of the United States Government. Accordingly, the United States Government retains a nonexclusive, royalty-free license to publish or reproduce the material contained herein, or allow others to do so, for the United States Government purposes.
>
> This technical report has been reviewed and is approved for publication.

Statement A reports--All Statement A reports must contain the following notice. Place it just before the review and approval sentence.

> This report has been reviewed by the Public Affairs Office and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

Proprietary information--The Project Officer or contractor who includes copyright material in a TR is responsible for obtaining permission to do so from the copyright owner. A copy of the letter of permission must accompany the report to the 1606 ABW/DAR or FCDNA (FCSR) printing establishments as appropriate.

Reports containing proprietary information shall include the following:

> This report contains proprietary information and shall not be either released outside the Government, or used, duplicated or disclosed in whole or in part for manufacture or procurement, without the written permission of (contractor). This legend shall be marked on any reproduction hereof in whole or in part.

The following marking shall be placed on each page of the report that contains proprietary material.

PROPRIETARY INFORMATION

Use or disclosure of (copyright) (courtesy) (proprietary) data contained herein is subject to the restriction on the Inside Front Cover.

DD FORM 1473 (REPORT DOCUMENTATION PAGE)

Preparation--Read the detailed instructions that accompany the DD Form 1473. Figure 6 is a sample of the form and includes the instructions for quick reference.

This form will be prepared by SUR from information provided by the Project Officer or contractor.

Do not number this page.

Place this form immediately after the front cover; it replaces the title page.

Abstract--Keep the Abstract brief, not to exceed 200 words. Provide a factual summary of the most significant information contained in the report.

SUMMARY

Include a Summary if necessary to give more information on the content of the report than is in the abstract. The Summary explains the reason for the work (the problem), lists the facts and their significance, and outlines the principal conclusions and recommendations. A Summary may permit a busy reader to become familiar with the contents without having to read the entire report.

Place the Summary on a right-hand page immediately following the DD Form 1473.

PREFACE

Include a Preface to show how the content of the report is related to associated efforts or volumes, to acknowledge significant assistance, and to give credit for the use of copyrighted material. Include volume numbers and titles of associated documents for cross-reference.

List those who contributed significantly to the work effort, but not to the extent of being coauthors.

Place the Preface after the Summary on a new right- or left-hand page.

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1 REPORT NUMBER: AFWL-TR-80-999, Pt. 1	2 GOVT ACCESSION NO. 3 RECIPIENT'S CATALOG NUMBER
4 TITLE (and Subtitle): STANDARDS FOR PREPARATION OF TECHNICAL REPORTS FOR THE AIR FORCE WEAPONS LABORATORY, Part 1 of 3	5 TYPE OF REPORT & PERIOD COVERED: Final Report 6 PERFORMING ORG. REPORT NUMBER
7 AUTHOR(s): John J. Jones, Captain, USAF	8 CONTRACT OR GRANT NUMBER(s)
9 PERFORMING ORGANIZATION NAME AND ADDRESS: Air Force Weapons Laboratory (SUR) Kirtland Air Force Base, NM 87117	10 PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: 62601F/99930000
11 CONTROLLING OFFICE NAME AND ADDRESS: Air Force Weapons Laboratory (SUR) Kirtland Air Force Base, NM 87117	12 REPORT DATE: March 1980 13 NUMBER OF PAGES: 372
14 MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15 SECURITY CLASS. (of this report): Unclassified 15a DECLASSIFICATION/DOWNGRADING SCHEDULE

16 DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17 DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18 SUPPLEMENTARY NOTES

This report is divided into three parts. Part 1 consists of the front matter and text pages 1-62. Part 2 consists of text pages 63-200. Part 3 consists of Appendixes A and B, and the distribution list.

19 KEY WORDS (Continue on reverse side if necessary and identify by block number)

TR	Metric System	TR Numbering Systems
MIL-STD-847A	SI Units	Classification Markings
Format	Math Signs and Symbols	

20 ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report implements MIL-STD-847A and presents the standards for preparing, editing, reproducing, and distributing Technical Reports for the Air Force Weapons Laboratory. Its purpose is to standardize details for clarity, uniformity, and consistency and thus reduce the costs of publication. Format samples follow immediately after instructions. These standards are intended to be used for reference in specific areas and need not be read from cover to cover. An index is included to aid the reader in finding the specific areas of interest.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

(a) Unclassified, in-house.

Figure 6. Sample DD Forms 1473.

SECRET

UNCLASSIFIED

[REGRADED UNCLASSIFIED AFTER SEPARATED FROM ENCLOSURES]

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1 REPORT NUMBER AFWL-TR-80-999, Vol. I of III	2 GOVT ACCESSION NO. / 3 RECIPIENT'S CATALOG NUMBER
4 TITLE and Subtitle STANDARDS FOR PREPARATION OF TECHNICAL REPORTS FOR THE AIR FORCE WEAPONS LABORATORY (U) Volume I: Security Requirements (U)	5 TYPE OF REPORT & PERIOD COVERED Final Report 6 PERFORMING ORG. REPORT NUMBER XYZ-78-153.2-A
7 AUTHOR(s) Robert B. Brown	8 CONTRACT OR GRANT NUMBER(s) F29601-76-C-XXXX
9 PERFORMING ORGANIZATION NAME AND ADDRESS XYZ Corporation 123 Blank Street Los Angeles, CA 90009	10 PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 62601F/99930000
11 CONTROLLING OFFICE NAME AND ADDRESS Director Defense Nuclear Agency Washington, DC 20305	12 REPORT DATE March 1980 13 NUMBER OF PAGES 72
14 MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Air Force Weapons Laboratory (XXX) Kirtland Air Force Base, NM 87117	15 SECURITY CLASS. (of this report) SECRET 15a DECLASSIFICATION/DOWNGRADING SCHEDULE [Match Front Cover]

16 DISTRIBUTION STATEMENT (of this Report)

Distribution limited to US Government agencies only; test and evaluation of military systems/equipment are discussed in the report; Mar 80. Other requests for this document must be referred to AFWL (---), Kirtland AFB, NM 87117, or Director, DNA, Washington, DC 20305.

17 DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18 SUPPLEMENTARY NOTES

This report consists of the following volumes:
I. Subtitle
II. Subtitle
III. Subtitle

19 KEY WORDS (Continue on reverse side if necessary and identify by block number)

TR	Metric System	TR Numbering Systems
MIL-STD-847A	SI Units	Classification Markings
Format	Math Signs and Symbols	

20 ABSTRACT (Continue on reverse side if necessary and identify by block number)

(U) This report implements MIL-STD-847A and presents the standards for preparing, editing, reproducing, and distributing Technical Reports for the Air Force Weapons Laboratory. Its purpose is to standardize details for clarity, uniformity, and consistency and thus reduce the costs of publication. Format samples follow immediately after instructions. These standards are intended to be used for reference in specific areas and need not be read from cover to cover. An index is included to aid the reader in finding the specific areas of interest.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

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SECRET SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

(b) Classified, contractor.

Figure 6. Concluded.

INSTRUCTIONS FOR PREPARATION OF REPORT DOCUMENTATION PAGE

RESPONSIBILITY. The controlling DoD office will be responsible for completion of the Report Documentation Page, DD Form 1473, in all technical reports prepared by or for DoD organizations.

CLASSIFICATION. Since this Report Documentation Page, DD Form 1473, is used in preparing announcements, bibliographies, and data banks, it should be unclassified if possible. If a classification is required, identify the classified items on the page by the appropriate symbol.

COMPLETION GUIDE

General. Make Blocks 1, 4, 5, 6, 7, 11, 13, 15, and 16 agree with the corresponding information on the report cover. Leave Blocks 2 and 3 blank.

Block 1. Report Number. Enter the unique alphanumeric report number shown on the cover.

Block 2. Government Accession No. Leave Blank. This space is reserved for use by the Defense Documentation Center.

Block 3. Recipient's Catalog Number. Leave blank. This space is for the use of the report recipient to assist in future retrieval of the document.

Block 4. Title and Subtitle. Enter the title in all capital letters exactly as it appears on the publication. Titles should be unclassified whenever possible. Write out the English equivalent for Greek letters and mathematical symbols in the title (see "*Abstracting Scientific and Technical Reports of Defense-sponsored RDT&E*," AD-667 000). If the report has a subtitle, this subtitle should follow the main title, be separated by a comma or semicolon if appropriate, and be initially capitalized. If a publication has a title in a foreign language, translate the title into English and follow the English translation with the title in the original language. Make every effort to simplify the title before publication.

Block 5. Type of Report and Period Covered. Indicate here whether report is interim, final, etc., and, if applicable, inclusive dates of period covered, such as the life of a contract covered in a final contract report.

Block 6. Performing Organization Report Number. Only numbers other than the official report number shown in Block 1, such as series numbers for in-house reports or a contractor or grantor number assigned by him, will be placed in this space. If no such numbers are used, leave this space blank.

Block 7. Author(s). Include corresponding information from the report cover. Give the name(s) of the author(s) in conventional order (for example, *John R. Doe* or, if author prefers, *J. Robert Doe*). In addition, list the affiliation of an author if it differs from that of the performing organization.

Block 8. Contract or Grant Number(s). For a contractor or grantee report, enter the complete contract or grant number(s) under which the work reported was accomplished. Leave blank in in-house reports.

Block 9. Performing Organization Name and Address. For in-house reports enter the name and address, including office symbol, of the performing activity. For contractor or grantee reports enter the name and address of the contractor or grantee who prepared the report and identify the appropriate corporate division, school, laboratory, etc., of the author. List city, state, and ZIP Code.

Block 10. Program Element, Project, Task Area, and Work Unit Numbers. Enter here the number code from the applicable Department of Defense form, such as the DD Form 1498, "Research and Technology Work Unit Summary" or the DD Form 1634, "Research and Development Planning Summary," which identifies the program element, project, task area, and work unit or equivalent under which the work was authorized.

Block 11. Controlling Office Name and Address. *Enter the full official name and address, including office symbol, of the controlling office. Equates to funding/sponsoring agency. For definition see DoD Directive 5200.20, "Distribution Statements on Technical Documents."*

Block 12. Report Date. Enter here the day, month, and year, or month and year, as shown on the cover.

Block 13. Number of Pages. Enter the total number of pages.

Block 14. Monitoring Agency Name and Address (*if different from Controlling Office*). *For use when the controlling or funding office does not directly administer a project, contract, or grant, but delegates the administrative responsibility to another organization.*

Blocks 15 & 15a. Security Classification of the Report. Declassification/Downgrading Schedule of the Report. Enter in 15, the highest classification of the report. If appropriate, enter in 15a the declassification/downgrading schedule of the report, using the abbreviations for declassification/downgrading schedules listed in paragraph 4-207 of DoD 5200.1-R.

Block 16. Distribution Statement of the Report. Insert here the applicable distribution statement of the report from DoD Directive 5200.20, "Distribution Statements on Technical Documents."

Block 17. Distribution Statement (*of the abstract entered in Block 20, if different from the distribution statement of the report*). Insert here the applicable distribution statement of the abstract from DoD Directive 5200.20, "Distribution Statements on Technical Documents."

Block 18. Supplementary Notes. Enter information not included elsewhere but useful, such as: *Prepared in cooperation with. Translation of (or by). Presented at conference of. To be published in.*

Block 19. Key Words. Select terms or short phrases that identify the principal subjects covered in the report, and are sufficiently specific and precise to be used as index entries for cataloging, conforming to standard terminology. The DoD "Thesaurus of Engineering and Scientific Terms," *TEST*, AD-672 000, can be helpful.

Block 20. Abstract. The abstract should be a brief (*not to exceed 200 words*) factual summary of the most significant information contained in the report. If possible, the abstract of a classified report should be unclassified and the abstract to an unclassified report should consist of publicly releasable information. If the report contains a significant bibliography or literature survey, mention it here. For information on preparing abstracts see "Abstracting Scientific and Technical Reports of Defense-Sponsored RDT&E," AD-667 000.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973—729-091/1431 3-

Figure 7. Instructions for DD Form 1473.

TABLE OF CONTENTS

Begin the Contents on a new right-hand page. List principal headings (preferably not beyond second-order head) as they appear in the report, and place the page numbers at the right-hand margin. Put section numbers, if used, at the left-hand margin and indent the headings. See Figure 8.

Center continuation page headings as follows: CONTENTS (Continued) and/or CONTENTS (Concluded).

Do not use a Contents page for reports of eight pages or less.

LIST OF ILLUSTRATIONS

List illustrations only if considered essential. See Figure 9(a).

Center continuation page headings as follows: ILLUSTRATIONS (Continued) and/or ILLUSTRATIONS (Concluded).

LIST OF TABLES

Include Tables listing only if considered essential. See Figure 9(b).

Center continuation page headings as follows: TABLES (Continued) and/or TABLES (Concluded).

NOTE: Place the Illustrations and Tables listings on one page if the listings are short.

CONTENTS

1

(a) Numbered.

Figure 8. Sample table of contents pages.

CONTENTS

(b) Unnumbered.

Figure 8. Concluded.

ILLUSTRATIONS

(a) Illustrations.

Figure 9. Sample lists of illustrations and tables.

TABLES

7/8

(b) Tables.

Figure 9. Concluded.

BODY OF REPORT

BREAKDOWN

Divide the body of the report into sections. Include a section heading and use major, secondary, and subsequent headings as required for clarity.

Introduction--Begin with the Introduction. State the objective of the work and provide other general or background information necessary for understanding the report. Describe briefly the information contained in the follow-on sections.

Present the Introduction in narrative style. Do not present the scope of the report by repeating the Contents. Do not go into such detail that much of the material will be repeated word for word later in the report.

Follow-on sections--Present your details here. Describe the test or work procedure, test equipment used, tests and calculations performed, the results obtained, etc.

Be concise and informative so that those technically concerned with the subject matter will not have to wade through the verbiage to get to the point.

Conclusions and recommendations--Present this information in one or two sections depending on length.

Tell what conclusions were reached as a result of the effort.

Specify your recommendations concerning future needs.

Do not summarize what has already been said.

Text footnotes--Identify text footnotes on each page with an asterisk (*), double asterisk (**), dagger (†), etc., or lowercase superior letters, depending on the number of footnotes. Place the information at the margin at the bottom of the page where cited, and separate from the text with a solid 1-inch-long line set flush. Put one line space above and one below the dividing line. NOTE: Reference footnotes precede text footnotes (number comes before symbol).

ILLUSTRATIONS

Numbering and placement--Number illustrations with Arabic numerals consecutively as they appear in the text and place them as near as possible after the first text reference.

Include corresponding letter designation with number for appendix figures (Example: Figure A2).

In reports containing only a few pages of text and many illustrations, place the illustrations in numerical sequence at the end of the text.

Illustrations in sequence, such as data plots, should be gathered in an appendix.

Turned pages--Place illustrations sideways if too wide for the page. Arrange so that report is turned clockwise to read. Put caption under the figure, not at bottom of page.

Captions--Place captions under figures, capitalize the F in figure and the first word of the caption. Use same print for figure captions as for text. Make figure captions descriptive but as brief as possible. End each caption with a period.

Center one-line captions. Line up subsequent lines of longer captions with the first line of the caption. Allow plenty of space to set off figures placed on a page with text.

Typical figure caption:

Figure 1. Geometry of one-dimensional calculation of pulsed electromagnetic fields through the D-region.

For related plots on separate pages:

Figure 9a. Time history of induced current at the wire midpoint for $\eta = 0.03$.

Figure 9b. Time history of induced current at the wire midpoint for $\eta = 0.05$.

General caption at bottom of a page with subtitles under separate prints:

(a) Input pulse; pulse peak 700 volts.
(b) Output pulse corresponding to (a).
(c) Input pulse; pulse peak 540 volts.
(d) Output pulse corresponding to (c).

Figure 22. Input pulses/output pulses.

Continued figures:

Figure 23. Time history of induced current.

Figure 23. Continued.

Figure 23. Concluded.

Identification in text--When identifying illustrations in text, precede by the word "Figure" if part of a sentence; otherwise, abbreviate and put in parentheses "(Fig. 15)."

Figures in series--Plots in a series such as time, distance, volume, etc., with one caption may show "Figure 1. Continued." on each continued plot and "Figure 1. Concluded." on the final plot.

Foldouts--Avoid oversize illustrations when possible. If unavoidable, begin them on a right-hand page. Place all foldouts at the back of the report, before the distribution list. Maximum acceptable page size is 25 inches.

Camera ready copy--Submit original art work; first-run computer printouts of plots, data, etc., with sharp clear print; and glossy photographs.

References on figures--Illustrations taken from other reports will show the reference number in parentheses at the end of the figure caption. Also, specify the reference number in parentheses on the page where the figure is called out in the text, and place the reference footnote at the bottom of the text page and not at the bottom of the figure page.

Explanatory information--Label (call out) all information on figures; the reader should not have to refer back to the text for such information as units, meanings of solid, dashed, dotted lines, shading, etc. Text explanation should refer to related data, comparisons of measurements and results, etc. Use abbreviations and symbols if adequately defined in the text. Be consistent in use of uppercase or lowercase letters; match text with callouts.

TABLES

Numbering and placement--Number tables in Arabic numerals consecutively as they appear in text, and place them as near as possible after the first text reference.

Include corresponding letter designation with number for tables in appendixes (Example: Table A3).

If reports contain only a few pages of text and many tables, place the tables in numerical sequence at the end of the text.

Separate the column headings from the body of the table with a horizontal line. Use vertical lines for column separation only when needed for clarity.

Turned pages--Place tables sideways if too wide for page. Arrange so that report is turned clockwise to read.

Title and column headings--Center the table number and title above the table in all caps using the same size print as for text; center subsequent lines of lengthy titles under preceding lines (known as the inverted pyramid format). Capitalize only the first word of a column heading.

Continued tables--Use all caps for "TABLE 1. CONTINUED." on each continued page and "TABLE 1. CONCLUDED." on the final page, and place at the left margin.

Identification in text--When identifying tables in text, precede by the word "Table" if part of a sentence; otherwise, put in parentheses "(Table 1)."

Footnotes to tables--Use superscript $^{a, b, c,}$ etc., to identify footnotes to tables. Place the superscript letter after words but before numbers, with no space in between. Place table footnotes under the tables, not at the bottom of the page of text. Indent first line five spaces from the left margin of the table; put subsequent lines at the margin of the table.

References on tables--Show the reference number in parentheses immediately after or below the table title. Also, specify the reference number in parentheses on the page where the table is called out in the text and place the reference footnote at the bottom of the text page and not at the bottom of the table page.

Abbreviations and explanations--Tables should stand alone; the reader should not have to refer back to the text to understand the table. Abbreviate in column headings if necessary because of space limitations. Place explanation below the table as "Notes." Include units of measure or degree in the column headings; do not repeat in the columns.

Camera ready copy--Submit original print. Tables on computer printout sheets must be first-run printout with sharp, clear, unbroken print.

See sample table in Figure 10.

TABLE 7. DOCUMENTS TO TRANSFER FUNDS (Ref. 99)

Supporting agency	Purpose	
	In-house support[a]	Contractual support
Outside AFWL - within AFSC/AFLC	Project Order	Procurement Directive
Outside AFSC/AFLC - within AF	Project Order	Obligation Authority
Outside DOD - within government	Project Order	Funded Purchase Request[b]
Outside AF - within DOD	Project Order	Military Interdepartmental Purchase Request

[a] If travel is the primary purpose, use an OA.

[b] If the supporting agency's contract will be with a civilian contractor, a normal PR to AFCMD/PMR applies, since a delivery order will be written by PMR to the supporting agency.

Figure 10. Sample table format.

REFERENCE MATERIAL

REFERENCES

A reference gives credit to the work of other authors in the same field of endeavor, is a source of related information, or contains useful facts or information.

A reference is a published document that is available to the reader. Telephone communications, letters, memoranda, personal conversations, and unpublished data are not numbered references. Make them footnotes to the text and identify them with an asterisk.

Numbering and placement--Number references consecutively in Arabic numerals as they appear in the text. Place number and complete reference at the margin at the bottom of the page where first cited; separate from the text in the same manner as a text footnote. Do not footnote more than three references on a page; just list them at the back of the report.

References listing--If there are more than 10 references, repeat them in a listing at the back of the report in the same numerical sequence as they appear in the text. Underscore book and report titles and journal names; use quotation marks for titles of journal articles. Include authors, titles, sources, identifying numbers, publication dates, and applicable security classifications. NOTE: Reference citations must be accurate and complete. Entries must be uniform in style throughout the report. Figure 11 shows different AFWL style entries; because of the variety of reference material, some minor adjustments may be necessary.

Identification in text--When identifying references in text, precede by the word "Reference" if part of a sentence; otherwise, abbreviate and put in parentheses; (Ref. 1). Do not use superscript numbers or bracket the numbers; these identification methods create confusion in technical reports containing numerous equations.

BIBLIOGRAPHY

A Bibliography is optional. Use a Bibliography to list supplementary reports and documents not called out in the text. Bibliographic entries will contain the same information as references, but are listed in alphabetical order (by author when possible), and are not numbered. See Figure 12, page 49.

SECRET

REFERENCES (U)

1. Military Standard, Format Requirements for Scientific and Technical Reports Prepared by or for the Department of Defense (U), (MIL-STD-847A), 31 Jan 1973 (Unclassified).

2. ASTM E380-76^{e}, ANSI Z210.1, Standard for Metric Practice (U), American Society for Testing and Materials, Philadelphia, PA, 19 January 1976 (Unclassified).

3. United States Government Printing Office Style Manual (U), Superintendent of Documents, US Government Printing Office, Washington, DC, January 1973 (Unclassified).

4. Information Security Program (U), DOD 5200.1-R/AFR 205-1, Superintendent of Documents, US Government Printing Office, Washington, DC, December 1978 (Unclassified).

5. Industrial Security Manual for Safeguarding Classified Information (U), DOD 5220.22-R, Superintendent of Documents, US Government Printing Office, Washington, DC, January 1979 (Unclassified).

6. Fowler, H. W., A Dictionary of Modern English Usage (U), Second Edition, Oxford University Press, New York, 1965 (Unclassified).

7. Langmuir, R. V., Electromagnetic Fields and Waves (U), McGraw-Hill, New York, 1961 (Unclassified).

8. Foley, A. H., "A Direct Reading High-Voltage Capacitance Bridge (U)," Trans. AIEE, 69, pp. 692-98, 1950 (Unclassified).

9. Crawford, R. E., et al., Protection from Nonnuclear Weapons (S), AFWL-TR-70-127, Air Force Weapons Laboratory, Kirtland Air Force Base, NM, February 1971 (Secret/Restricted Data).

SECRET

(a) Classified.

Figure 11. Sample reference lists.

AFWL-TR-79-999

REFERENCES

1. Military Standard, Format Requirements for Scientific and Technical Reports Prepared by or for the Department of Defense, (MIL-STD-847A), 31 Jan 73.

2. ASTM E380-76^{e}, ANSI Z210.1, Standard for Metric Practice, American Society for Testing and Materials, Philadelphia, PA, 19 January 1976.

3. United States Government Printing Office Style Manual, Superintendent of Documents, US Government Printing Office, Washington, DC, January 1973.

4. Information Security Program, AFR 205-1, Superintendent of Documents, US Government Printing Office, Washington, DC, 21 June 1976.

5. Information Security Program Regulation, DOD 5200.1-R, Superintendent of Documents, US Government Printing Office, Washington, DC, July 1972.

6. Industrial Security Manual for Safeguarding Classified Information, DOD 5200.22-M, Superintendent of Documents, US Government Printing Office, Washington, DC, April 1970.

7. Fowler, H. W., A Dictionary of Modern English Usage, Second Edition, Oxford University Press, New York, 1965.

8. Langmuir, R. V., Electromagnetic Fields and Waves, McGraw-Hill, New York, 1961.

9. Foley, A. H., "A Direct Reading High-Voltage Capacitance Bridge," Trans. AIEE, 69, pp. 692-98, 1950.

10. Crawford, R. E., et al., Protection from Nonnuclear Weapons, AFWL-TR-70-127, Air Force Weapons Laboratory, Kirtland Air Force Base, NM, February 1971.

75

(b) Unclassified.

Figure 11. Concluded.

BIBLIOGRAPHY

Bland, D. R., Linear Viscoelasticity, Vol. 10, International Series of Monographs in Pure and Applied Mathematics, Pergamon Press, 1960.

Glasstone, Samuel and Dolan, Phillip J., ed., The Effects of Nuclear Weapons, US Department of Defense and US Department of Energy, Washington, DC, 1977.

Marks' Standard Handbook for Mechanical Engineers, Eighth Edition, McGraw-Hill Book Company, New York, 1978.

Webster's New Collegiate Dictionary, G. & C. Merriam Company, Springfield, Massachusetts, 1977.

Figure 12. Sample bibliography.

APPENDIXES

Appendixes are used to detail information too cumbersome for the main body of the report. Such information includes computer data, test data, complex calculations and formulas, tabulations, plots, charts, graphs, and similar material.

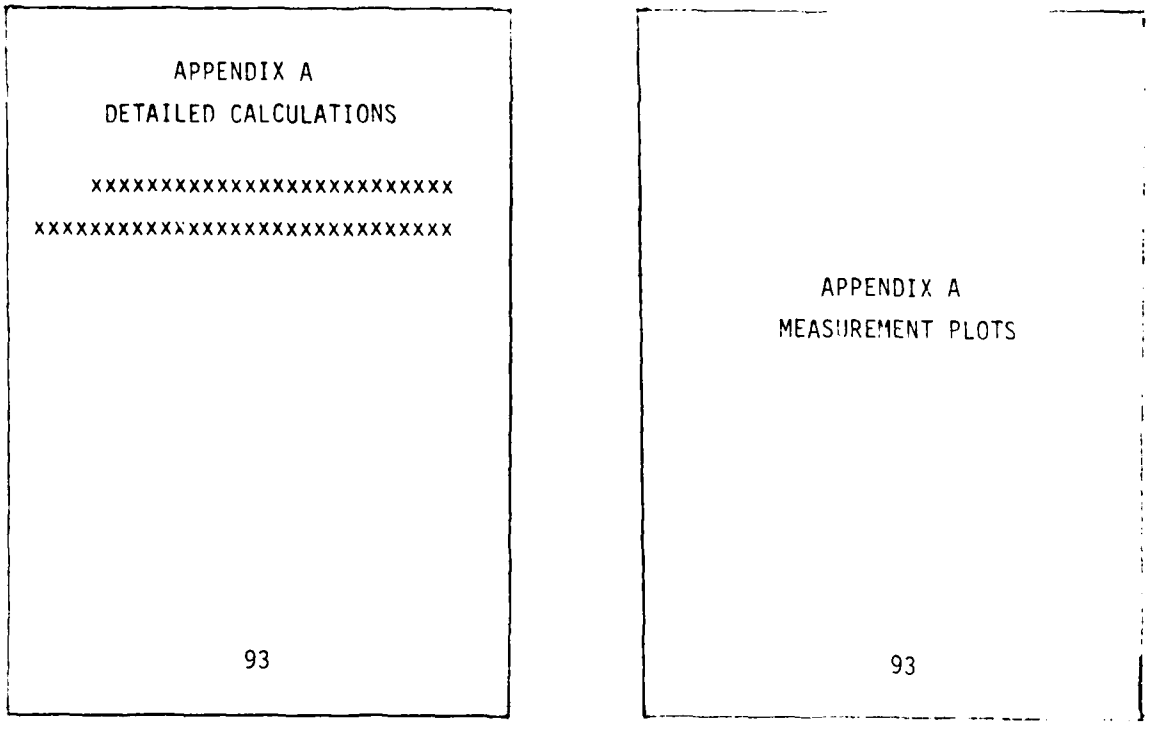
Identification--Identify each Appendix with a letter designation (for example, Appendix A) and a title. Center the word Appendix, the letter designation, and the title in all caps; place at top margin if it starts on a page of text, or in the center of a separate page if the Appendix consists of all data. See sample title pages in Figure 13.

Paging and placement--Continue page numbering in sequence with the previous portions of the report.

Begin the first Appendix on a right-hand page and begin each subsequent Appendix on a new right- or left-hand page.

Include the letter designation with figure, table, and equation numbers; i.e., Figure A2, Table B3.

Place the first Appendix after the References or Bibliography listings, if contained in the report; otherwise, place it after the text.



(a) On a page of text. (b) On a separate page.

Figure 13. Sample appendix title pages.

GLOSSARY OF TERMS

Define all unusual terms the first time they are used in text. If defined in a footnote, use asterisks. If there are many such terms, repeat them in a Glossary of Terms.

ABBREVIATIONS, ACRONYMS, AND SYMBOLS

Abbreviations lend brevity and economy to report writing. However, they should be used sparingly. Spell out all abbreviations the first time they are presented in the text and show the abbreviation in parentheses; i.e., electromagnetic pulse (EMP). Include units where applicable.

If there are many abbreviations, repeat them in a list at the back of the report. List the abbreviations alphabetically in the following order: (1) English capital letters, (2) English lower case letters, (3) Greek capital

letters, (4) Greek lower case letters, (5) subscripts, (6) superscripts, and (7) special notes. See example in Figure 14 below.

A	Area, m^2
F	Force, N
PFS	Porous friction surface
RCR	Runway condition rating
RV	Reentry vehicle
V	Velocity, m/s
d	Cone diameter
g	Acceleration of gravity
v	Volume, m^3
w	Weight, kg
α	Angular acceleration, rad/s^2
ε	Orbital eccentricity
θ	Angle of roll, radians
μ	Particle velocity

Figure 14. Sample listing of abbreviations, acronyms, and symbols.

MEASUREMENT UNITS

Measurement units in all documents presented to the Air Force are required to be in the International System of Units, generally known as SI. This system is a modern version of the MKSA (metre, kilogram, second, ampere) system. Reference 2, Standard for Metric Practice, is a non-Government standard that has been approved for use by agencies of the Department of Defense for listing in the DOD Index of Specifications and Standards.

> NOTE: Exception to the above requirement may be made when the R&D effort in question interfaces with existing Air Force systems based on the English measurement system. In such cases, the use of both systems is preferred. However, the Project Officer (in coordination with AFCMD/PKR) may grant an exemption because of increased costs.

STYLE

Abbreviate units only when used with a specific number; i.e., 3 m. Otherwise, spell out; i.e., energy is measured in joules.

Use numerals to express measurements; i.e., 12.7 mm, 4 s, 3 kg, - 0.24 V.

Capitalize symbols for SI units if derived from a proper name (Hz, N, J); use lower case if derived from a proper name and spelled out (hertz, newton, joule).

SI symbols are written in singular form; unabbreviated SI units form their plurals in the usual manner.

50 newtons	50 N
25 grams	25 g

The attached listing (Table 4) of AFWL authorized abbreviations is extracted primarily from Reference 3.

---

2. ASTM E380-76^{e}, ANSI Z210.1, Standard for Metric Practice, American Society for Testing and Materials, Philadelphia, PA, 19 January 1976.
3. United States Government Printing Office Style Manual, Superintendent of Documents, US Government Printing Office, Washington, DC, January 1973.

TABLE 4. STANDARD ABBREVIATIONS

Part 1. Units of Measurement

acceleration due to gravity	g
ampere	A
ampere-hour	Ah
ampere-turn per meter	At/m
angstrom	Å
atmosphere	atm
atomic mass unit	u
atto- (prefix, 10^{18})	a
bar	spell out
British thermal unit	Btu
caliber	spell out
Calorie (large)	Cal
calorie (small)	cal
candela (candle obsolete)	cd
candela per square meter	cd/m^2
centi- (prefix, 10^2)	c
centigram	cg
centimeter	cm
centimeter per second	cm/s
cosine	cos
cosine, hyperbolic	cosh
coulomb	C
cubic centimeter (liquid)	cc
cubic centimeter (volume)	cm^3
cubic foot	ft^3
cubic foot per minute	ft^3/min
cubic foot per second	ft^3/s
cubic inch	in^3
cubic kilometer	km^3
cubic meter	m^3
cubic micrometer	μm^3
cubic millimeter	mm^3
curie	Ci
cycle	spell out
cycle per second (obsolete)	use Hz
deka- (prefix, 10)	da
deci- (prefix, 10^{-1})	d
decibel	dB
decibel referred to 1 milliwatt	dBm
decibel referred to 1 watt	dBW
degree (angular)	deg
degree (latitude/longitude)	°
degree Celsius (Centigrade)	°C
degree Fahrenheit	°F
------ kelvin	K
degree rankine	°R
dyne	dyn

TABLE 4. CONTINUED.

electromagnetic unit	emu
electronvolt	eV
electrostatic unit	esu
erg	spell out
farad	F
femto- (prefix, 10^{-15})	f
fermi	F
foot	'
footcandle	fc
footlambert	fL
foot per minute	ft/min
foot per second	ft/s
foot per second squared	ft/s^2
foot pound	ft-lb
foot poundal	ft-pdl
foot pound-force	ft-lbf
gallon	gal
gallon per minute	gal/min
gallon per second	gal/s
gauss	G
giga- (prefix, 10^9)	G
gigacycle	Gc
gigaelectronvolt	GeV
gilbert	Gb
gram	g
gram-calorie	g-cal
hecto- (prefix, 10^2)	h
henry	H
hertz	Hz
horsepower	hp
hour	h
inch	in
inch per second	in/s
inch pound	in-lb
international angstrom	IÅ
joule	J
kelvin (no degree symbol)	K
kilo- (prefix, 10^3)	k
kilobar	kbar
kilocycle	kc
kiloelectronvolt	keV
kilogram-calorie	kg-cal
kilogram-force	kgf
kilogram-meter	kg-m
kilogram per cubic meter	kg/m^3
kilogram per second	kg/s

TABLE 4. CONTINUED.

kilohm	kΩ
kiloliter	kl
kilometer	km
kiloton	KT or kt*
kilovolt	kV
kilovoltampere	kVA
kilovolt peak	kVp
kilowatt	kW
kilowatthour	kWh
kips per square inch	k/in^2
knot	spell out
lambert	L
linear foot	lin ft
liter	l
lumen	lm
lumen per watt	lm/W
lux	lx
maxwell	Mx
mega- (prefix, 10^6)	M
megacycle	Mc
megaelectronvolt	MeV
megahertz	MHz
megaton	MT or Mt*
megohm	MΩ
meter	m
mho	spell out
micro- (prefix, 10^{-6})	μ
microampere	μA
microfarad	μF
microgram	μg
micrometer	μm
micron (obsolete) use	μm
microsecond	μs
microvolt	μV
microwatt	μW
mil	spell out
mile	mi
mile per hour	mi/h
milli- (prefix, 10^{-3})	m
milliampere	mA
millibar	mbar
millicurie	mCi
millifarad	mF
milligauss	mG
milligram	mg
millihertz	mHz
milliliter	ml
millimeter	mm
millimicron (obsolete)	nm (nanometer)
milliroentgen	mR
millisecond	ms

*Preferred.

TABLE 4. CONTINUED.

millivolt	mV
millivolt per cycle	mV/c
milliwatt	mW
minute	min
mole	mol
month	mo
nano- (prefix, 10^{-9})	n
nanometer	nm
nanosecond	ns
nautical mile	nmi
neper	Np
newton	N
oersted	Oe
ohm	Ω
ounce	oz
ounce-foot	oz-ft
ounce-inch	oz-in
parts per million	p/m
pascal	Pa
pico- (prefix, 10^{-12})	p
picofarad	pF
pint	pt
poise	P
pound	lb
poundal	pdl
pound-foot	lb-ft
pound-force	lbf
pound-force foot	lbf/ft
pound-force per square inch	lbf/in^2
pound per cubic foot	lb/ft^3
pound per square foot	lb/ft^2
pound per square inch	lb/in^2
pound per square inch absolute	lb/in^2a
pound per square inch gauge	lb/in^2g
pulse per second	p/s
quart	qt
radian	rad
revolution	rev
revolutions per minute	r/min
revolutions per second	r/s
rod	spell out
roentgen	R
root mean square	rms
second (time)	s
second-foot	s-ft
sine	sin
slug	spell out

TABLE 4. CONTINUED.

square centimeter	cm^2
square foot	ft^2
square inch	in^2
square kilometer	km^2
square meter	m^2
square micrometer	μm^2
square mile	mi^2
square millimeter	mm^2
square yard	yd^2
steradian	sr
tera- (prefix, 10^{12})	T
tesla	T
ton	T or t*
torr	spell out
volt	V
voltampere	VA
voltampere reactive	VAr
watt	W
watthour	Wh
watt per steradian	W/sr
weber	Wb
week	wk
yard	yd
year	yr

*Preferred.

TABLE 4. CONTINUED.

Part 2. General Abbreviations

alternating current	AC or a.c.*
altitude	alt
amplitude modulation	AM
atomic	at.
atomic weight	at. wt
audio frequency	AF
azimuth	az
boiling point	bp
center of gravity	CG
center of impact	CI
center of pressure	CP
circular error probable	CEP
coefficient	coef
continuous wave	CW
diameter	diam
direct current	DC or d.c.*
electromotive force	e.m.f. or emf
electronic countermeasure	ECM
equation	Eq.
extremely high frequency	EHF
extremely low frequency	ELF
frequency modulation	FM
gauge	ga.
ground zero	GZ
high energy	HE
high explosive	HE
high frequency	HF
infrared	IR
inside diameter	ID
intermediate frequency	IF
linear	lin
linear foot	lin ft
logarithm	log
low frequency	LF
magnetomotive force	m.m.f. or mmf
mark	mk
mean effective pressure	MEP
mean point of impact	MPI
mean sea level	MSL

*Preferred

TABLE 4. CONCLUDED.

medium frequency	MF
melting point	m.p.
minimum	min
molecular weight	mol wt
molecule	mol
natural log or logarithm	n.l.
number, numbers	No., Nos.
outside diameter	OD
pulse amplitude modulation	PAM
pulse code modulation	PCM
pulse duration modulation	PDM
pulse repetition frequency	PRF
radio frequency	RF
root-mean-square	RMS
specific gravity	sp. gr.
specific heat	sp. ht.
specific volume	sp. vol
square	sq
standard	std
telemetry	TM
temperature	temp
ultrahigh frequency	UHF
ultraviolet	UV
versus	v. or vs.
very high frequency	VHF
very low frequency	VLF
weight	wt

DNA-FUNDED REPORTS

DNA-funded reports prepared by or for the AFWL must conform to DNA requirements as follows:

FRONT COVER

The last sentence of Distribution Limitation Statement B reports will read as follows:

> Other requests for this document must be referred to AFWL (Project Officer's office symbol), Kirtland Air Force Base, NM 87117, or Director, DNA, Washington, DC 20305.

See sample cover in Figure 4(d), page 25.

DD FORM 1473

The instructions and a sample of this form are shown in Figure 6, page 34.

The wording in Blocks 11, 16, and 18 must be the same as the front cover.

Block 13 includes the total number of pages plus the Distribution List pages.

PAGINATION

Right-hand pages--Section I, each Appendix, and the Distribution List must begin on a right-hand page.

Page limitation--DNA-funded reports are limited to 344 pages per volume or book.

DISTRIBUTION

The Project Officer must obtain prior approval of the Distribution List from Headquarters, DNA, Attn: STTI, for all DNA-funded technical reports. The Project Officer is also responsible for providing mailing labels (double labels for classified) along with the approved Distribution List.

CLASSIFICATION MARKINGS

Conform to the appropriate security regulations.

PRINTING

DNA reports are printed by FCDNA (FCSR).

SECURITY CLASSIFICATION REQUIREMENTS

References 4 and 5 contain the security classification and marking instructions. Adhere to DOD 5200.1-R/AFR 205-1 (Ref. 4) for in-house reports, and to the Industrial Security Manual (Ref. 5) for contractor-prepared reports. The figures that are cited from the Front Matter section are identified by page number.

OVERALL DOCUMENT CLASSIFICATION

Show the overall classification at the top and bottom of the front and back covers, the DD Form 1473 (which takes the place of the title page), and the first page of the document. Do not indicate (This page is unclassified). Use preprinted paper or reproduction masters, or preprinted paste-ons. Inked stamp pads are too messy for published documents.

FRONT COVER

The Project Officer will provide the necessary declassification/review statements for the front cover as set forth in the Executive Order 12065. See sample covers in Figures 4(b) and 4(c) on pages 26 and 27.

INSIDE FRONT COVER

Show UNCLASSIFIED marking at top and bottom of the page (Fig. 5(b), p. 30).

DD FORM 1473

Page classification--Show the overall classification of the document at the top and bottom on both sides of the form in addition to the page classification where indicated. Also show the document classification in Block 15 and the declassification/review schedule in Block 15a. If the information on the form is unclassified, include the following statement on the upper right-hand corner of the DD Form 1473: REGRADED UNCLASSIFIED WHEN SEPARATED FROM ENCLOSURES.

---

4. Information Security Program, DOD 5200.1-R/AFR 205-1, Superintendent of Documents, US Government Printing Office, Washington, DC, December 1978.
5. Industrial Security Manual for Safeguarding Classified Information, DOD 5220.22-R, Superintendent of Documents, US Government Printing Office, Washington, DC, January 1979.

Abstract--Abstracts of classified reports should be unclassified when possible. Precede each paragraph with the classification symbol. If possible, limit classified abstracts to one paragraph. See sample of DD Form 1473 for the classified report in Figure 6(b), page 34.

Title classification--Use unclassified report titles for classified reports. Put (U) at the end of the report title on the front cover and in Block 4 of the DD Form 1473.

PAGE CLASSIFICATION

Center the page classification at the top and bottom of the page, leaving one-fourth inch of margin space each way. Mark each page separately according to the highest classification of information on that particular page.

FOLDOUT PAGE CLASSIFICATION

Place the page classification on the portion of a foldout page that shows the classification markings after the page has been folded. Begin foldouts on a right-hand page. See Figure 15(a) for a right-hand foldout page and Figure 15(b) for a left-hand (backup) foldout page. Maximum acceptable size is 25 inches.

CLASSIFICATION SYMBOLS

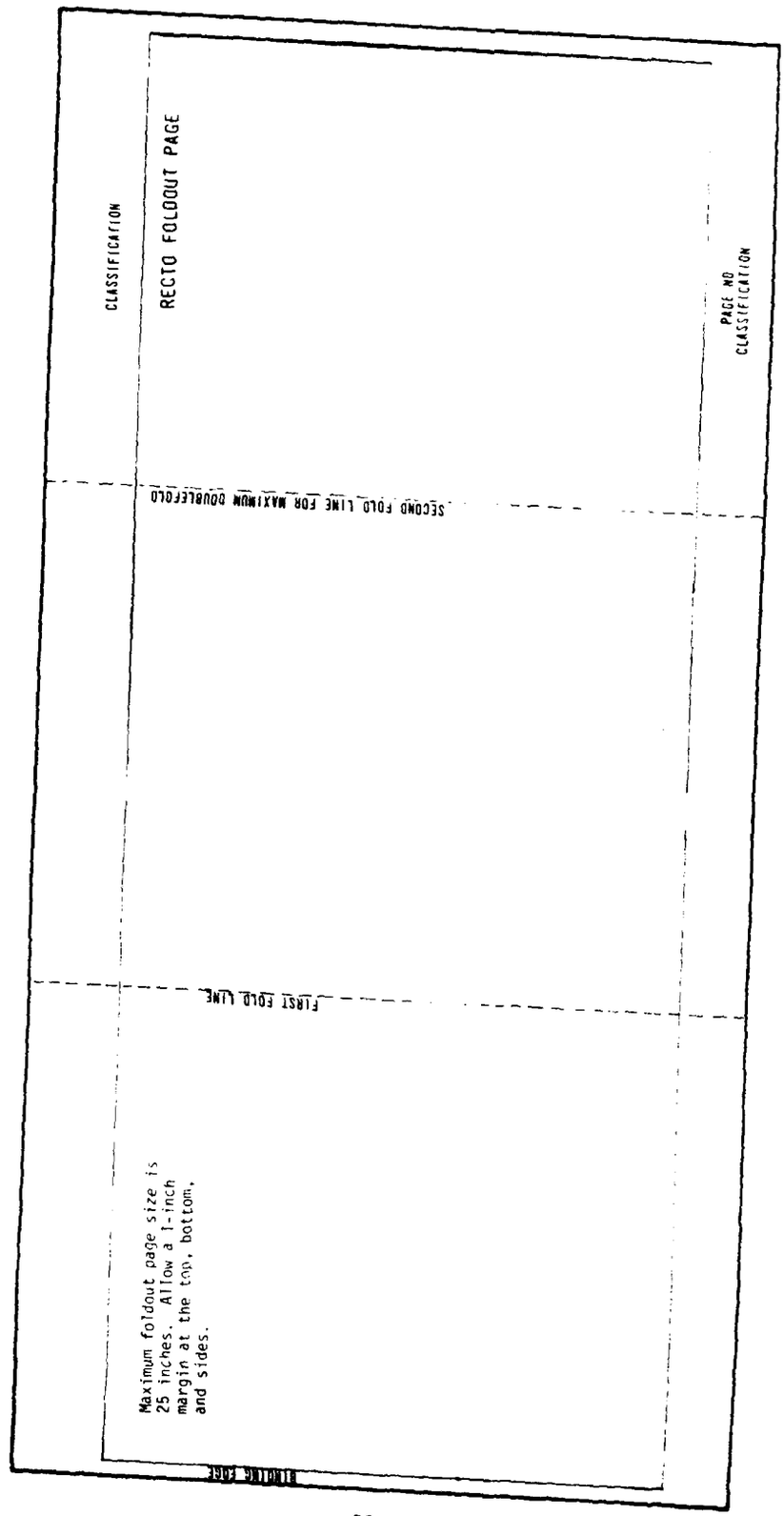
Use the paragraph classification symbols (C), (S), (S-RD), (S-FRD), and (S-RD)(N) for Confidential, Secret, Secret-Restricted Data, Secret-Formerly Restricted Data, and Secret-Restricted Data-Critical Nuclear Weapons Design Information, respectively.

HEADINGS

Put classification symbol before all titles and section headings (after the number or letter, if applicable), including such obviously unclassified headings as (U) INTRODUCTION. Major paragraph headings, as well as subheadings followed by text, will be treated as paragraphs for classification purposes. Samples are shown in Figure 16.

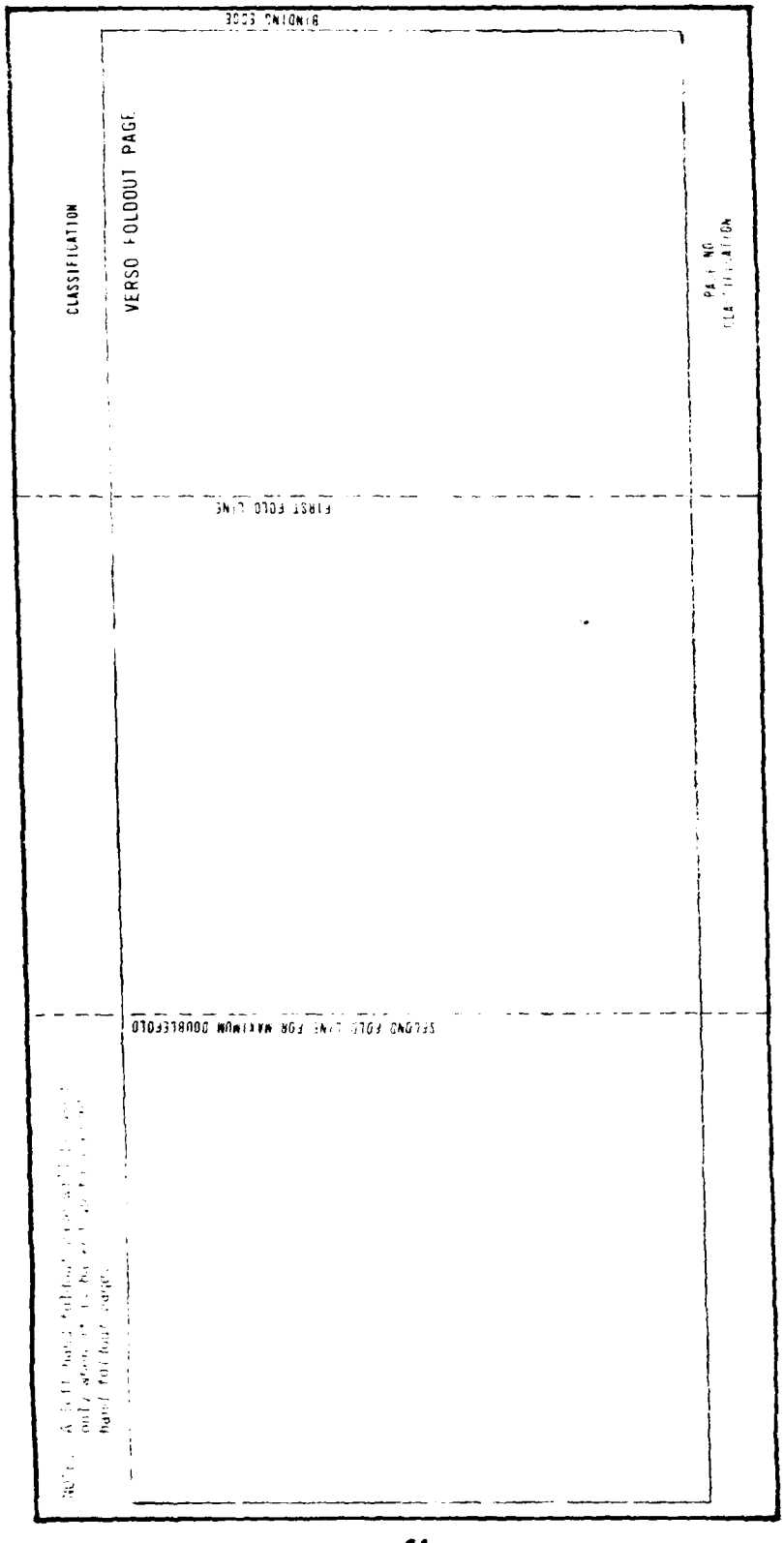
PARAGRAPH CLASSIFICATION

Include the classification symbol of each paragraph and subparagraph in parentheses at the indention (after the number or letter, if applicable), followed by one space before the first word of text. Samples are shown in Figure 16.



(a) Front.

Figure 15. Sample foldout page.



(b) Back.

Figure 15. Sample foldout page.

II. (U) FIRST-ORDER HEAD

1. (U) SECOND-ORDER HEAD

a. (C) Third-order head--Xxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

(1) (U) Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx:

(a) Xxxxxxxxxxxxx
(b) Xxxxxxxxxxxxx
(c) Xxxxxxxxxxxxx

(2) (C) Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

(a) Numbered.

(U) FIRST-ORDER HEAD

(U) SECOND-ORDER HEAD

(U) Third-order head--Xxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

(U) Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

(1) (U) Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
(2) (U) Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
(3) (C) Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

(S) Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

(b) Unnumbered.

Figure 16. Paragraph classification markings.

Footnote classification--Paragraph classify all footnotes to text.*

Collective material requiring classification--Paragraph classification of such a report is not required. Put the overall security marking at the top and bottom of each page and on the front and back covers of reports containing information that by itself is unclassified but that requires a classification when combined. Include the following explanation in Block 18 of the DD Form 1473:

> This report is classified _____
> based on the overall aggregate of information
> contained herein.

Place the following statement on the Inside Front Cover: "This report does not include paragraph classification because classification is based on the overall aggregate of information contained herein."

*(U) This is sample of footnote classification.

ILLUSTRATION CLASSIFICATION

Where figures appear alone on a page, show the classification at the top and bottom of the page.

Where two or more figures appear on the same page or a figure appears on a page of text where there are differences in classification, show the classification in the lower right-hand corner of the figure in addition to the page classification. Just type it in.

Put the classification symbol of the figure caption after the figure number and before the caption. Samples are shown in Figure 17.

TABLE CLASSIFICATION

Where tables appear alone on a page, show the classification at the top and bottom of the page.

Where two or more tables appear on the same page or a table appears on a page of text where there are differences in classification, show the classification in the lower right-hand corner of the table in addition to the page classification. Just type it in.

Put the classification symbol of the table title before the title. Samples are shown in Figure 18.

REFERENCES

Do not reference classified reports in Statement A documents; i.e., "Approved for public release; distribution unlimited."

Put the classification symbol of the report title after the title, and spell out the classification of the report in parentheses at the end of the entry.

Show the page classification of the References listing. This page is usually unclassified, since most report titles are unclassified.

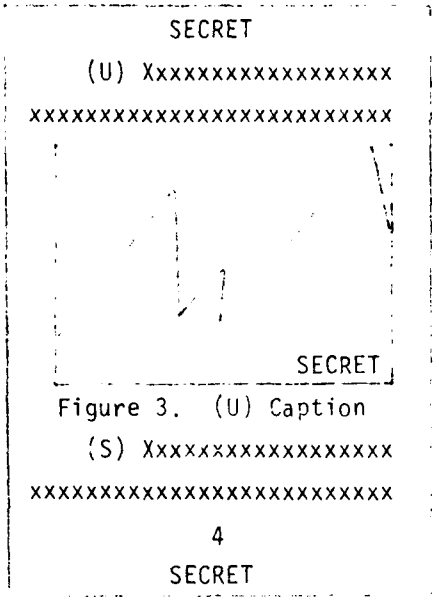
Examples are shown in Figure 11, page 47.

BIBLIOGRAPHY

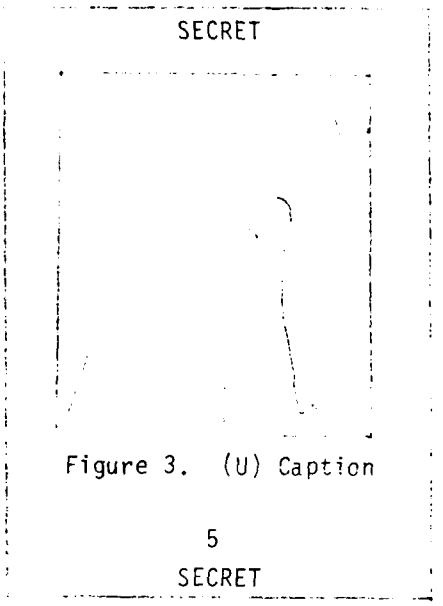
Include the same classification marking for the Bibliography as for the References.

DISTRIBUTION LIST

Distribution lists for classified reports must include a certification signed by the Project Officer's Division chief that all addresses have the appropriate

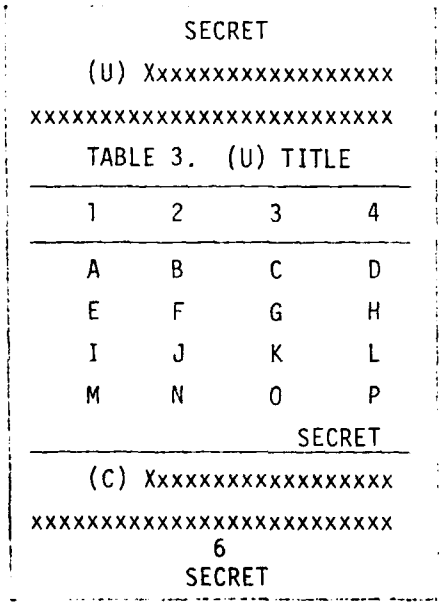


(a) Figure in text.

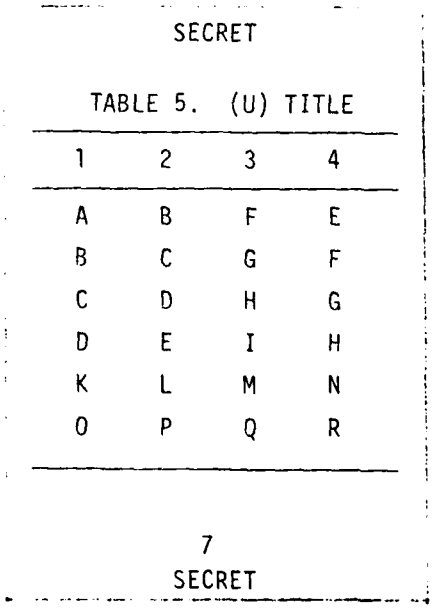


(b) Figure alone.

Figure 17. Classification of illustrations.



(a) Table in text.



(b) Table alone.

Figure 18. Classification of tables.

facility clearance and storage capabilities for the level of security classification assigned to the information in the document. Sample letters are available from SUR. CAUTION: Contact the AFWL Security Office for procedures for obtaining verification of all facility clearances. Just because a facility has a security clearance, there is no guarantee the facility has classified storage capabilities.

BLANK PAGES

For classified reports, blank pages must be identified as such. Center the statement (This page intentionally left blank.) in the middle of the page as illustrated in Figure 19. NOTE: Do not slash-number pages (i.e., 3/4) in a classified report.

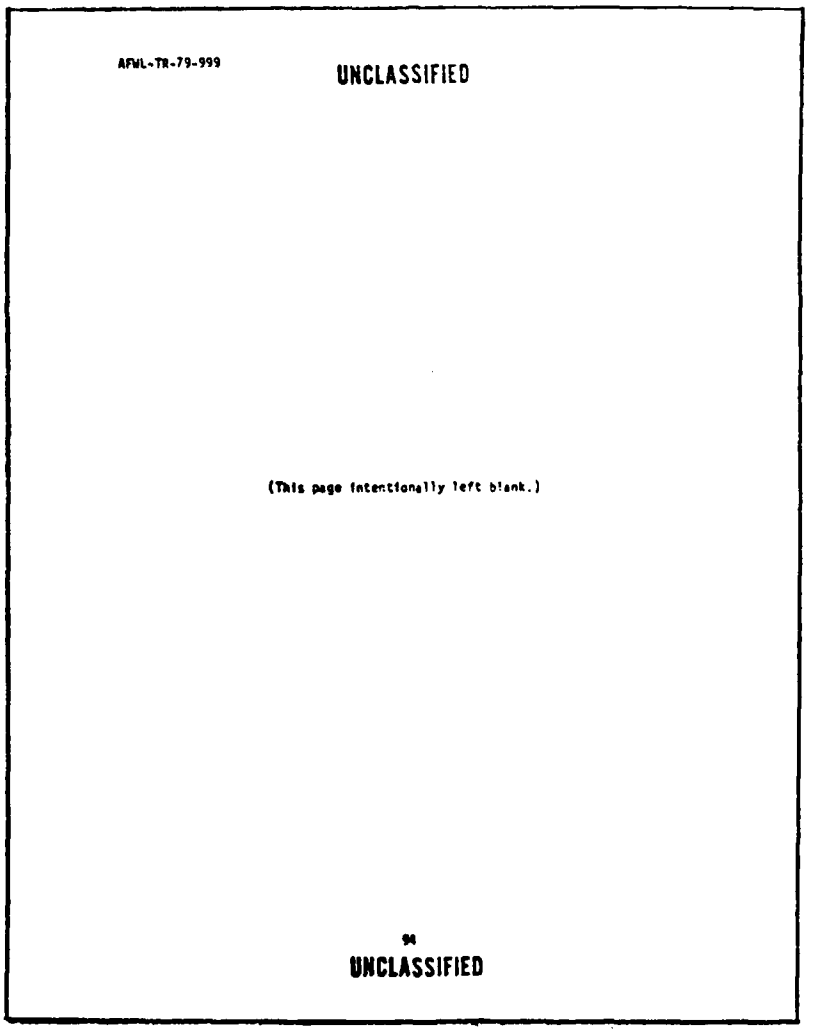


Figure 19. Sample blank page in a classified report.

INDEX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27 May 1981

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Make the following pen and ink changes:

Page 47 Change the sample heading to read: "(U) REFERENCES"

Page 61 OVERALL DOCUMENT CLASSIFICATION
First paragraph. Change to read: "Show the overall classification at the top and bottom of the front and back covers and the DD Form 1473 (which takes the place of the title page). Use preprinted paper or reproduction masters, or preprinted paste-ons. Inked stamp pads are too messy for published reports."

Page 62 PAGE CLASSIFICATION. Add: "Do not indicate (This page is Unclassified)."

Page 65 Figure 16(a): Place "(U)" after "(a)," "(b)," "(c)," before X's used to indicate text.

Page 67 a. ILLUSTRATION CLASSIFICATION. Delete the first paragraph. Change the second paragraph to read: "Show the classification of each figure separately. Use the unabbreviated form, and place it within or just below the figure in the lower right-hand corner. Typewritten classification must be all caps; preprinted paste-ons are preferred."

b. TABLE CLASSIFICATION. Delete the first paragraph. Change the second paragraph to read: "Show the classification of each table separately. Use the unabbreviated form, and place it within or just below the table in the lower right-hand corner. Typewritten classification must be all caps; preprinted paste-ons are preferred."

Page 68	Figures 17(b) and 18(b). Place "SECRET" on the sample figure and table, in the same positions shown on Figures 17(a) and 18(a).

Authority:

ALTHEA R. GUIST
Project Officer

MARGARET PUTNAM
Chief, Technical Reports Branch